

specified in Eq. (2) of our main text using *Settled* fraud dummy, which equals one if the company was associated with class action suits that are already settled as of Jan 2016. In Column 3, we introduce a more broadly defined fraud dummy (*SCAC + AAER*), which takes of a value of one if the company was sued by private investors (*SCAC*) or faced enforced actions initiated by SEC (*AAER*). Our results are robust to the use of these two alternative corporate fraud variables. In the remaining Columns 4 and 5 of the same Panel A, we further show the robustness of our baseline results to the use of some alternative control variables. There we use a 3-year average *operating profit* and *roa* as alternative firm-level performance measures rather than the lagged 1-year *operating profit*. We also use the 3-year *buy-and-hold return*, instead of using the yearly average stock return. In those two Columns 4 and 5 of Panel A of Table 13, we confirm that our main results carry through.

Finally, we address the concern that the existence of former employee directors is simply the outcome of a bad external governance structure. Companies with weak external governance system could be weak firms that are more likely to hire former employee directors. If true, the external governance failure is the underlying factor that drives the increased propensity to commit fraud. To address this concern, we show in Columns 1 and 2 of Panel B of Table 13, that there is no apparent link between the presence of former employee directors and any of the widely used external governance proxies including the *G-Index* and its various sub-index components. The results from the two columns also demonstrate that these results are robust to different time periods (before and after the 2007 structural break in the ISS database). Likewise, in Columns 3 and 4 for the same corresponding time periods we also demonstrate that our main link between fraud and our measure of functional independence is robust to also including these alternative governance measures as additional control variables.

9. Conclusion

In this paper, we show that a true measure of board independence requires a careful disentangling of both the functioning role of gray directors and the firm's decision on whether to

classify former employees as independent or gray. By reclassifying the gray directors, we find that the likelihood of fraud significantly increases when a firm has former employees serving on its board of directors. These effects are particularly strong when these former employee directors have previously served with the current CEO as an executive director, or when they assume important monitoring responsibilities by serving on the auditing and compensation committees. By contrast, we find that other “outside” gray directors, who are not former employees, are less associated with fraud. These effects are particularly strong when the outside gray directors include consultants who are particularly concerned about maintaining their external reputations.

In this regard, we clearly demonstrate that gray directors are not a monolithic group, and that there are important “shades of gray” within this group. Given this perspective, we construct a novel measure of a board’s functioning independence that differs from traditional measures of independence in two important ways. First, we exclude former employees who are classified as independent. Second, we include all gray directors who are not former employees. In a broad series of empirical tests, we demonstrate that while there is no significant link between the traditional measure of independence and corporate fraud, there is a strong statistical and economically significant negative link between our measure of functional independence and the likelihood of fraud.

Apart from a careful disentangling of the role played by various board members, we also demonstrate that there is an association between how a board chooses to classify its former employee directors and the incidence of fraud. Most notably, fraud is increasingly more likely to occur when the firm uses its discretion to classify a former employee as an independent director. We contend that firms that aggressively choose to classify these directors as independent are providing a window into the firm’s tendency to be either conservative or aggressive – which is correlated with its tendency to be involved in fraudulent activities. In this respect, our analysis provides deeper insights into how firms vary in terms of their true desire for functioning independence.

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Appendix A. Variable Definitions

Variable Name	Definition
<i>Dependent variable</i>	
fraud	Dummy variable that equals one if a firm in year t falls in the lagged class action lawsuit period (i.e., the period between class action start and end dates).
<i>Firm financials</i>	
BNH	Buy-and-hold return in year t.
BNH3	Cumulative buy-and-hold return in past three years (year t-2 to year t).
ABBNH3	Cumulative buy-and-hold return in past three years (year t-2 to year t) adjusted for the value-weighted CRSP return during the same period
leverage	Ratio of the book value of long term debt (DLTT) to the book value of a firm's total assets (AT).
market value	Natural logarithm of the common shares outstanding (CSHO) times the share price (PRCC_C).
operating profit	Ratio of the earnings before interests and taxes (EBIT) to the book value of a firm's total assets (AT).
operating profit3	Trailing three-year average of the earnings before interests and taxes (EBIT) to the book value of a firm's total assets (AT).
return	Average monthly return in year t.
roa	Ratio of the operating income before depreciation (OIBDP) to the book value of a firm's total assets (AT).
roa3	Trailing three-year average of the operating income before depreciation (OIBDP) to the book value of a firm's total assets (AT).
size	Natural logarithm of the book value of a firm's total assets (AT).
volatility	Standard deviation of monthly stock returns in year t.
<i>Board characteristics</i>	
board size	Total number of directors on the board.
CEO turnover	Dummy variable that equals one if the CEO is dismissed for reasons other than "RETIRED" in the Execucomp database
CEO_Chairman	Dummy variable that equals one if the CEO also serves as Chairman of the board
CEO_tenure	The number of years that the CEO has served in the firm (including both CEO and non-CEO positions)

former	Dummy variable that equals one if a firm has at least one former employee director on the board.
former (%)	The percentage of former employee director(s) on the board.
former(CEO)	Dummy variable that equals one if a firm has at least one former CEO on the board.
former(non-CEO)	Dummy variable that equals one if a firm has only non-CEO former employee directors on the board.
former(appointed)	Dummy variable that equals one if a firm has at least one former employee who was elected to the board when the current CEO was already a board member.
former(non-appointed)	Dummy variable that equals one if a firm has only former employee director(s) who were elected after the current CEO served the board.
former(executive)	Dummy variable that equals one if a firm has at least one former employee director who has previously worked with the current CEO on the board as executive directors.
former(non-executive)	Dummy variable that equals one if a firm has only former employee director(s) who has never worked with the current CEO on the board as executive directors.
former(connected)	Dummy variable that equals one if a firm has at least one former employee director with a social connection to the CEO. Social connections are established through external institutions.
former(non-connected)	Dummy variable that equals one if a firm has only former employee director(s) with no social connections to the CEO. Social connections are established through external institutions.
former(audit)	Dummy variable that equals one if a firm has at least one former employee director serving on the audit committee.
former(no-audit)	Dummy variable that equals one if a firm has no former employee director(s) on the audit committee.
former(compensation)	Dummy variable that equals one if a firm has at least one former employee serving on the compensation committee.
former(no-compensation)	Dummy variable that equals one if a firm has no former employee director(s) on the compensation committee.
former(nomination)	Dummy variable that equals one if a firm has at least one former employee serving on the nomination committee.
former(no-nomination)	Dummy variable that equals one if a firm has no former employee director(s) on the nomination committee.
G(former) (%)	The percentage of gray/affiliated former employee director(s) on the board.
G(non-former) (%)	The percentage of gray/affiliated director(s) on the board who is (are) not former employee(s) of the firm.

G(consultants) (%)	The percentage of gray/affiliated director(s) serving as the external consultant(s) on the board.
G(consultants with multiple directorships) (%)	The percentage of gray/affiliated director(s) serving as the external consultant(s) on the board. The director(s) must also serve on more than 3 other public boards (historically and concurrently).
GG (former)	Dummy variable that equals one if a firm has at least one former employee director identified as gray/affiliated by both ISS and BoardEx.
GI (former)	Dummy variable that equals one if a firm has at least one former employee director identified as independent by BoardEx but gray/affiliated by ISS.
I(former) (%)	The percentage of independent former employee director(s) on the board.
IG (former)	Dummy variable that equals one if a firm has at least one former employee director identified as independent by ISS but gray/affiliated by BoardEx.
II (former)	Dummy variable that equals one if a firm has at least one former employee director identified as independent by both ISS and BoardEx.

Appendix B. Director Independence Standards: The Case of Former Employee Directors

In this appendix, we explain major changes in independent director criteria in the cases of former employees due to the 2002 SARBANES–OXLEY ACT (SOX) (Section B.1) as well as the ISS structural break in 2007 when RiskMetrics Group (RiskMetrics hereafter) acquired the ISS (when it was formerly named IRRC) and updated their independent director standards (Section B.2). We further provide anecdotal evidence on several cases where firms endogenously classify their former employee directors to be independent.

B.1. Independent Director Standards Before and After the SOX

SOX was enacted on July 30, 2002. The Act’s broad objective was to improve corporate governance, and it specifically focuses on increasing the overall independence of corporate boards by regulating the composition of the critical audit committee. Following the passage of SOX, self-regulatory organizations such as the New York Stock Exchange, Inc. (NYSE) and the National Association of Securities Dealers, Inc. (NASD) contemporaneously proposed a rule change to strengthen corporate governance practices of their listed companies (“NASD and NYSE Rulemaking: Release No. 34-48745,” Securities Exchange Commission (SEC), November 4, 2003). For example, on August 16, 2002 and October 9, 2002, NYSE and NASD (through its subsidiary, the NASDAQ Stock Market, Inc.) respectively proposed corporate governance listing standards that went beyond the SOX provisions regarding the structure of audit committees. These standards require that boards have a majority of independent directors (NYSE Section 303A(1) and NASD Rule 4350(c)(1)). During this amendment process, they also revised their definitions of an independent director. Particularly relevant for our paper, NASD Rule 4200(a)(15), stipulated that a director who had been employed by the company within the past three years by any parent or subsidiary of the company, would not qualify as independent (“NASDAQ Employee Provision”). Similarly, “NYSE Employee Provision” introduces the same three-year “cooling-off” period as a part of their new independent director requirements.

Before their new proposals, the “cooling-off” period had been just one year. The SEC approved these proposals on Tuesday, November 4, 2003.

B.2. Independent Director Standards Before and After the 2007 ISS Structural Break

ISS (when it was formerly named IRRC) was acquired by RiskMetrics Group in 2007, and they updated their independence director standards following the acquisition. Since 2007, ISS benchmark policy (“United States: Summary Proxy Voting Guidelines 2016 Benchmark Policy Recommendations,” February 1, 2016) has a five-year “cooling-off” policy for former executive officers of the company, an affiliate, or an acquired firm, with the exception of former CEOs. Due to their influence on the board and management, ISS considers former CEOs as always affiliated (i.e., gray) with the company they previously headed.

However, prior to the 2007 structural break, ISS had imposed a much stricter policy that none of former employees of the company or its affiliates including subsidiaries, sibling companies, or parent companies, could be classified as independent, i.e., the infinite look-back or cooling-off period (see “ISS Updates Proxy Voting Policies Effective February 1,” February 1, 2004 as well as “Overview of IRRC Directors in WRDS”).¹ As a result of the structural break in director classifications, the average percentage of independent directors in our ISS sample increased from 74.4% to 79.9% between 2006 to 2007, while at the same time the average percentage of gray/affiliated directors dropped from 10.2% to 4.9% (which also explains the sharp decrease from 359 to 144 gray/affiliated directors in our sample from 2006 to 2007). Specifically regarding the classification of former employee directors, 32 directors were reclassified all at once from gray/affiliated to independent from 2006 to 2007, which is a dramatic increase from the average level of reclassifications at other years (three former employee directors reclassified from gray to independent from 2005 to 2006, and four from 2004 to 2005).

¹ We further confirm with ISS on this infinite cooling-off period prior to 2007 via separate email communications.

B.3. Anecdotal Evidence on Endogenous Director Classifications: The Cases of Former Employee Directors

The following episodes summarize various cases where firms with discretion endogenously classify their former employee directors to be independent. Some of the cases coincide with the 2007 change in the “cooling-off” period for former employee independent directors in the ISS database.

Inconsistent Director Classification Across Databases: One example relating to the inconsistent director classifications across databases is Mr. Robert Burgess, who was the CEO of Macromedia, Inc., a provider of internet and multimedia software. He held the position as CEO from November 1996 to January 2005 until Adobe System acquired the firm. Mr. Burgess immediately joined the board of Adobe following the acquisition in 2005. On the company’s official website, he was reported as independent.² In WSJ, the director is identified as independent as well. However, proxy agency including ISS has identified him as affiliated/gray because of concerns related to his previous employment history with the company’s newly created subsidiary. Some institutional investors had similar sentiments and voted against the re-election of Mr. Robert Burgess as an independent director.³ In our database, Mr. Robert Burgess is an example of the directors reported as independent by BoardEx and identified as gray by ISS.

Similarly, Mr. John C. Miles II is reported as an independent director by the firm, Dentsply International Inc., but identified as gray/affiliated by ISS. He served as CEO of the firm from 1996 to 2004, and then was the Chairman of the board from May 1998 until May 2005. Institutional investors advised by the proxy agencies such as ISS have voted against Mr. Miles on the basis of “aggressive reporting” by the firm.⁴

² Detailed board descriptions on <http://www.adobe.com/leaders/board-directors.html>.

³ A sample proxy voting statement related to this matter is available on <https://www.triodos.com/downloads/investment-management/research/proxy-voting-downloads/2013/adobe-agm.pdf>.

⁴ A sample proxy voting statement related to this matter is available on <https://www.triodos.com/downloads/investment-management/research/proxy-voting-downloads/2016/dentsply-international-egm-2016.pdf>.

Director Classification affected by the ISS Structural Break: 32 former employee directors in our sample are affected by the ISS structural break, and thus dynamically reclassified from gray/affiliated to independent from 2006 to 2007. One of the relevant cases is Mr. Richard A. Hackborn who served on Hewlett-Packard's (HP) board. He was a former employee who built HP's lucrative printer business in the 1980s. He joined HP as Vice President of Printing in 1979, and later became the Executive Vice President of Computer Products from 1990 to 1993. He joined the board of HP at 1992, and assumed the role of Chairman in 2000.⁵ He stayed on the board until 2009, but his classification in ISS was reclassified from gray/affiliated in 2006 (*ISS legacy database*) to independent in 2007 (*ISS database*). However, despite the passive switch in the ISS classification, we are not able to identify any fundamental improvements in the former employee's ability, monitoring incentives and entrenchments with the current management during the structural break.

Dynamic Director Re-classification by a Firm: NYSE and NASDAQ imposed the three-year "cooling off" period in an attempt to more properly classify former employee directors. This shift may induce dynamic director reclassifications by firms looking to window-dress their board independence to meet the new regulatory rules. One apparent such cases is Mr. Robert Bennett at Discovery Communications. Mr. Robert Bennett was one of the founding executives of Liberty Media and served as its Principal Financial Officer from its inception in 1991 until 1997. After that, he served as the president of Liberty Media Corporate from 1997 to 2006. In 2005, Discovery Communications was spun off from Liberty Media, and Mr. Bennett served as President of Discovery Communications from 2005 to 2008. After he left his executive position in 2008, he served as an affiliated/gray director on Discovery's board up until 2011. Since 2011, his classification has been switched to independent director. The reclassification is consistently with the three-year look back period enforced by NYSE and NASDAQ. Detailed board classification is available at BoardEx and Bloomberg.⁶ CtW Investment has raised concerns on the reclassified independence of Mr. Robert Bennett, citing the extensive collegial relationships

⁵ Director profile is available at Capital IQ, and NNDB.com.

⁶ See <http://www.bloomberg.com/research/stocks/private/person.asp?personId=207011&privcapId=316516>.

Table 11. Causal Regressions

In the following table, we report our main identification regressions. *Fraud* dummy is our main dependent variable. *former (%)* represents the percentage of former employees on board. We break down the former employee directors to recently-retired former employee directors who quit their executive positions less than three years ago (subject to regulatory shocks) and the rest of former employee directors. According to the presence of the former group at the end of year 2001, we define our treatment group. Panel A reports the covariate balancing between our treatment and control groups at the end of year 2001. In Panel B, we conduct instrumental variable (IV) probit regressions on various experiment windows to show the robustness of our identification strategy. In Column 1, we set the window to be sharp, one-year pre-treatment (2001) and one-year treatment year (2002) using the treated group we define in Panel A. In Columns 2 to 4 of Panel B, we extend our treatment period to 2004 to broadly capture any staggered treatment effects. In Column 4, we also extend our pre-treatment years including 2000 as well as 2001. *Treatment Group #1* in Columns 1 and 2 consists of firms whose boards include a recently retired former employee director as of the end of 2001. Alternatively, *Treatment Group #2* in Columns 3 and 4 consists of firms whose boards include a recently retired former employee director as of 2001, but the group is adjusted to the time passage effects. See Section 6 of our main text for more detailed explanations on these time passage effects. *Shock* is our instrument that takes a value of one if a firm is treated in a given year. Control variables include monthly stock price *volatility*, annual *stock return*, *board size*, *firm size*, and *operating profit*. *Z* (or *t*) statistics are reported in the parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Panel A	Treatment Group		Control Group		Difference (t-statistic)
	N	Mean	N	Mean	
<i>volatility</i>	53	0.117	272	0.123	-0.006 (-0.62)
<i>operating profit</i>	53	0.103	272	0.093	0.010 (0.42)
<i>firm size</i>	53	8.76	272	8.97	-0.209 (-0.85)
<i>leverage</i>	53	0.209	272	0.224	-0.015 (-0.53)
<i>market value</i>	53	8.93	272	8.99	-0.058 (-0.31)
<i>I(%)(BoardEx)</i>	53	58	272	60	-2.00 (-0.85)
<i>board size</i>	53	9.60	272	9.08	0.523 (0.99)

Panel B	(1)		(2)		(3)		(4)	
	01-02 (T=02)		01-04 (T=02,03,04)		01-04 (T=02,03,04)		00-04 (T=02,03,04)	
	Treatment Group #1		Treatment Group #1		Treatment Group #2		Treatment Group #2	
	2-Stage	1-Stage	2-Stage	1-Stage	2-Stage	1-Stage	2-Stage	1-Stage
<i>former (%)</i>	0.06***		0.07***		0.06***		0.06***	
	(3.02)		(4.40)		(3.06)		(3.46)	
<i>Shock</i>		-2.80*		-2.75**		-4.24***		-2.30**
		(-1.92)		(-2.36)		(-3.20)		(-2.21)
Over-Id P-Value		0.609		0.983		0.759		0.439
1-Stage Prob > F		0.000		0.000		0.000		0.000
Control Variables	YES	YES	YES	YES	YES	YES	YES	YES
Industry/Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Cluster by Firm	YES	YES	YES	YES	YES	YES	YES	YES
N	464	464	985	985	985	985	1452	1452

Table 12. CEO Turnover and Former Employee Director

In the following table, we run a probit regression of CEO *Turnover* on the existence of former employee director(s). *Turnover* dummy is our main dependent variable. *BNH3* represents the buy-and-hold return in the past three years including dividends. *ABBNH3* represents the buy-and-hold return in the past three years after adjusting for the CRSP value-weighted return during the same period. Control variables include *board size*, *firm size*, *CEO_Chairman* duality dummy, and *CEO's tenure* within the firm. Z statistics are reported in the parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)
	Turnover	Turnover	Turnover	Turnover
<i>BNH3</i>	-0.0613* (-1.93)		-0.0945** (-2.36)	
<i>ABBNH3</i>		-0.0623* (-1.95)		-0.116*** (-2.63)
<i>former</i>	-0.176*** (-2.91)	-0.176*** (-2.91)	-0.215*** (-3.39)	-0.207*** (-3.42)
<i>former*BNH3</i>			0.0792* (1.67)	
<i>former*ABBNH3</i>				0.114** (2.41)
<i>size</i>	0.00968 (0.42)	0.00964 (0.42)	0.00835 (0.36)	0.00764 (0.33)
<i>board size</i>	0.0400*** (3.30)	0.0399*** (3.30)	0.0401*** (3.33)	0.0398*** (3.33)
<i>CEO_chairman</i>	-0.231*** (-3.22)	-0.231*** (-3.22)	-0.233*** (-3.24)	-0.233*** (-3.24)
<i>CEO_tenure</i>	-0.0291*** (-4.58)	-0.0291*** (-4.59)	-0.0288*** (-4.54)	-0.0288*** (-4.56)
<i>Constant</i>	-1.383*** (-4.26)	-1.444*** (-4.50)	-1.349*** (-4.14)	-1.415*** (-4.39)
Industry/Year FE	Yes	Yes	Yes	Yes
Cluster by Firm	Yes	Yes	Yes	Yes
Pseudo R ²	5.28%	5.29%	5.37%	5.47%
<i>N</i>	3912	3912	3912	3912

Table 13. Robustness Checks

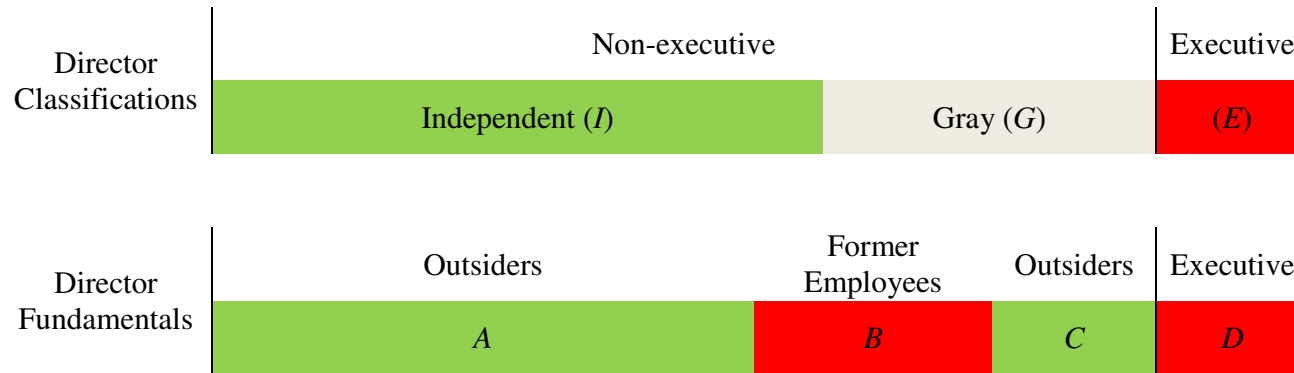
This table reports the robustness of our main results to various alternative specifications and controls. In Column 1 of Panel A, we use a logit specification, instead of a probit. In Column 2 and Column 3 of Panel A, we create alternative dependent variables according to the statuses of class action suits and the scope of the fraud sample. We re-run our baseline probit regressions as specified in Eq. (2) of our main text. *Settled* is the dependent variable that equals one if the company was associated with class action suits that are already settled as of Jan 2016. *SCAC + AAER* is the dependent variable that equals one if the company was sued by private investors (SCAC) or faced enforced actions initiated by SEC (AAER). In Columns 4 and 5 of Panel A, we report the same probit regressions with the *fraud* dummy as our dependent variable, while we replace our original control variables with the 3-year average *operating profit*, *ROA*, and *BNH*. In Panel B, we show the robustness of our results to controlling for external governance variables. In Columns 1 and 2 of the panel, we first show the relation between the external governance variables and the existence of a former employee on the board. We run alternative probit regressions using former employee director dummy (*former*) as the dependent variable. In the next Columns 3 and 4, we report that our baseline probit regressions using our functioning board independence as a main explanatory variable are robust to controlling for the additional external governance variables. Our original control variables in the baseline probit specification include monthly stock price *volatility*, annual *stock return*, *board size*, *firm size*, and *operating profit*. Z statistics are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Panel A	Logit (1)	Alternative Dependent (2) (3)		3-Year Average (4) (5)	
	Fraud	Settled	SCAC + AAER	fraud	fraud
<i>I+G-former (%)</i>	-0.02*** (-2.62)	-0.01** (-2.00)	-0.01*** (-2.89)	-0.02*** (-3.18)	-0.01*** (-2.96)
<i>operating profit</i> ₃				1.35** (2.04)	
<i>ROA</i> ₃					1.58** (2.14)
<i>BNH</i> ₃				0.06** (2.01)	0.06** (2.02)
<i>operating profit</i>	2.58*** (3.35)	0.95** (2.02)	1.30*** (3.21)		
<i>stock return</i>	-2.95 (-1.42)	-2.86** (-2.31)	-1.48 (-1.51)		
<i>volatility</i>	3.23** (2.50)	1.36* (1.68)	1.92*** (3.00)	1.58** (2.32)	1.88*** (2.69)
<i>firm size</i>	0.54*** (7.18)	0.24*** (5.25)	0.27*** (7.05)	0.31*** (7.63)	0.30*** (7.48)
<i>board size</i>	-0.03 (-0.79)	-0.02 (-1.09)	-0.02 (-1.23)	-0.02 (-1.17)	-0.01 (-0.76)
<i>Constant</i>	-3.71*** (-4.32)	-1.49*** (-2.67)	-1.71*** (-3.81)	-3.32*** (-7.97)	-2.28*** (-4.75)
Industry/Year FE	YES	YES	YES	YES	YES
Cluster by Firm	YES	YES	YES	YES	YES
Pseudo R ²	16.14%	13.38%	16.23%	15.49%	15.55%
N	4017	3626	4017	3913	3919

Panel B	Deterministic Regression		Fraud Regression	
	(1)	(2)	(3)	(4)
Gov. Provisions	00-06 former	00-12 former	00-06 fraud	00-12 fraud
<i>G-Index</i>	-0.020 (-0.61)		0.00939 (0.30)	
<i>super majority</i>	0.093 (0.56)	0.0998 (0.77)	0.199 (1.15)	0.107 (0.81)
<i>golden parachute</i>	-0.119 (-0.88)	-0.200** (-2.02)	0.0344 (0.27)	0.0385 (0.44)
<i>classified board</i>	-0.176 (-1.26)	-0.138 (-1.33)	-0.116 (-0.92)	-0.0369 (-0.37)
<i>dual class</i>	0.338 (1.54)	0.252 (1.35)	0.0730 (0.36)	-0.0649 (-0.40)
<i>poison pill</i>	-0.048 (-0.37)	-0.0199 (-0.19)	-0.0194 (-0.15)	-0.0291 (-0.29)
<i>I+G-former(%)</i>			-0.0101* (-1.69)	-0.0105** (-2.37)
<i>formers' shareholdings (%)</i>			0.0223 (0.62)	0.0126 (0.46)
<i>Constant</i>	0.462 (0.35)	1.213*** (7.37)	-4.392*** (-3.89)	-2.097*** (-4.14)
Baseline Controls	NO	NO	YES	YES
Industry/Year FE	YES	YES	YES	YES
Cluster by Firm	YES	YES	YES	YES
Pseudo R ²	7.74%	7.50%	17.00%	15.58%
N	2258	4321	1971	3895

Figure 1. Traditional vs. Functional Board Independence

In the following figure, we compare the database-driven traditional board classification and the functional classification that we emphasize based on director fundamentals. In traditional board classification, a director is reported as independent (*I*), gray (*G*) or executive (*E*). Only non-executive independent directors (*I*) are classified as active monitors on the incumbent management team. In contrast, in our functional board classification, the same directors are classified as functional outsider (could be either independent or gray), former employees (could be either independent or gray), and executives.



- A* = Directors classified as independent that are not former employees
- B* = Former employee directors, classified as either gray or independent
- C* = Directors classified as gray that are not former employees
- D* = Executive/employee directors

Figure 2. Self-Reported (BoardEx) vs. Independently Identified (ISS) Board Compositions

In the following figures, we show the self-reported and independently-identified board compositions of S&P 500 firms over time. The solid lines represent the average board grayness (Panel A), independence (Panel B) and board size (Panel C) in BoardEx, while the dashed lines show the same average levels using ISS (formerly RiskMetrics Group). Due to the acquisition by RiskMetrics Group, ISS changed their independence standards in 2007. We connect the 2006 data point and the 2007 data point with dotted lines to emphasize the structural break in ISS data.

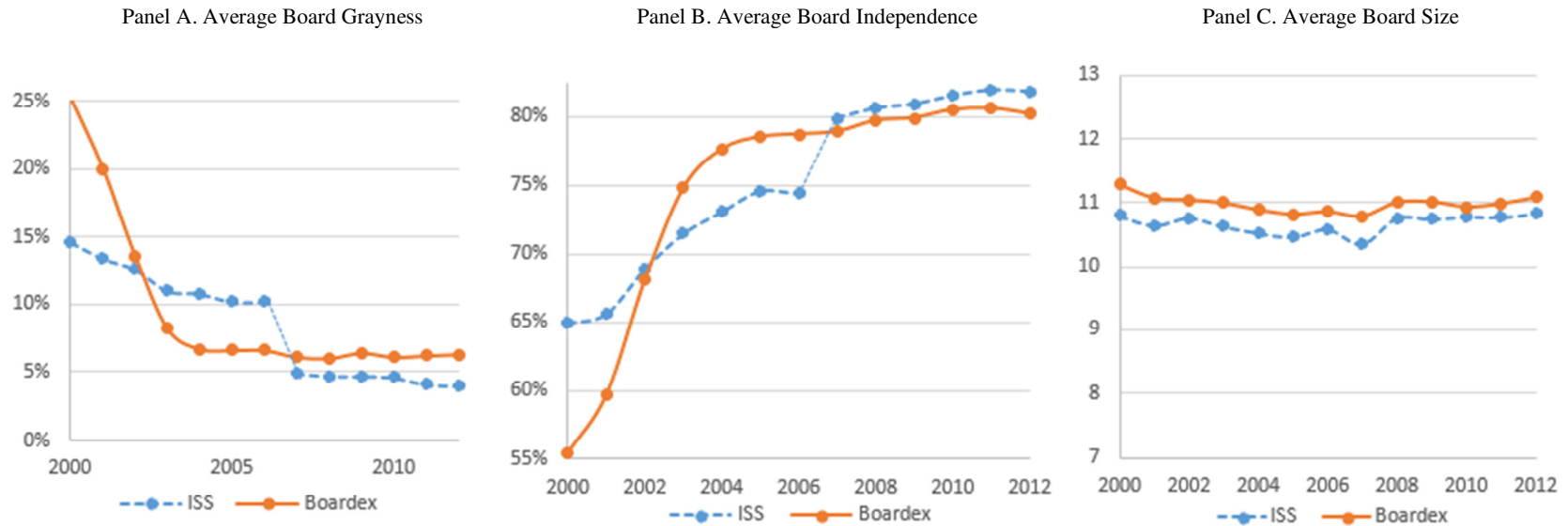


Figure 3. Heterogeneous Reactions of Former Employee Directors to SOX

In the following figure, we plot the number of former employee directors who recently retired less than or equal to three years ago (subject to the regulatory shock) and the number of other former employee directors. The dashed line describes the trend of recently retired former employee directors during the SOX compliance period (2002-2004), while the solid line shows the pattern for other former employee directors. The figure starts at the end of year-2000 till the end of year-2005.

